

Patent claims

1. A method of operating an internal combustion engine with an injection device, in which method

- combustion air is fed to a combustion chamber via an inlet port,
- fuel is injected into the combustion chamber by means of a fuel nozzle arranged in the combustion chamber,
- a formed fuel/air mixture is ignited at a certain ignition point by means of a spark plug arranged in the combustion chamber, and
- during the starting of the internal combustion engine, a high-pressure or a low-pressure start is selected as a function of a minimum fuel pressure built up in the injection device within a defined number of cycles,

characterized in that

- the minimum fuel pressure and the number of cycles are selected as a function of a combustion-chamber temperature,
- the injection of the fuel into the combustion chamber preferably taking place in a timed sequence during the starting operation.

2. The method as claimed in claim 1, characterized in that, during the starting operation, the total fuel quantity injected is introduced into the combustion chamber in up to three partial quantities.

3. The method as claimed in claim 3, characterized in that, during a low-pressure start, the up to three partial quantities are injected into the combustion chamber before the ignition point, and, during a high-pressure start, the up to two partial quantities are injected into the combustion chamber before the ignition point and one partial quantity is injected into the combustion chamber after the ignition point.

4. The method as claimed in one of the preceding claims, characterized in that the ignition point during the starting

operation is determined as a function of the combustion-chamber temperature and a difference between an actual speed and an idling speed.

5. The method as claimed in one of the preceding claims, characterized in that, during a high-pressure start, if the fuel pressure drops below a defined minimum pressure in the injection device, the operation is changed over to the low-pressure start.

6. The method as claimed in one of the preceding claims, characterized in that the combustion-chamber temperature is recorded by means of a temperature-measuring device at the combustion chamber or with reference to a coolant temperature of the internal combustion engine.

7. The method as claimed in one of the preceding claims, characterized in that a low-pressure start is effected at a coolant temperature of less than -15°C or greater than 90°C , a high-pressure start being effected at a minimum fuel pressure, built up in the injection device, of at least 10 bar and at a coolant temperature of between -15°C and 90°C .